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ABSTRACT

Appreciation and concern for the preservation of our natural resources by all citizens is the primary concern of this teacher's guide for use in the elementary grades. It employes the use of a filmstrip in conjunction with a local nature trail, to guide students in developing awareness - by looking closely, listening, touching, and smelling. Major themes of the fall tour consider plant and animal relationships, seed dispersal, and getting ready for winter. The filmstrip is explained in its entirety, illustrating each frame and its accompanying script. Questions in the script are designed to encourage class discussion during the viewing time. Bracketed paragraphs provide the teacher with additional information. Local history and use of the area are presented in four short narrations; Winnebago Indians of the Four Lakes Area, Gorham Spring - The Duck Pond, the Marston Spring, and the Arboretum Spring. Also included is an article about the common ground mole. The filmstrip is not included. This work was prepared under an ESEA Title III contract. (BL)

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ED 078871

Dudgeon School

Monroe Street

Arbor Drive

Parking Lot

Mowed Area

Three Sentinels

Council Ring

Ho-nee-um Rock

Foot

Ho-Nee-Um Trail

Hollow Tree

Woods

Island

Lookout Point

Marsh View

Foot Bridge

Turtle Island

Junction

Marsh

Lookout Platform

Lake Wingra

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HO-NEE-UM TRAIL IN THE FALL

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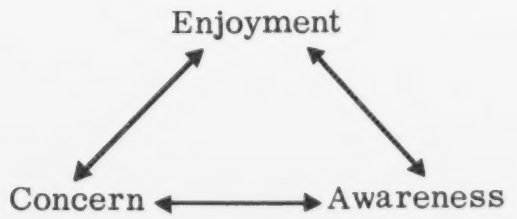
OBJECTIVES



Enjoyment — A tour should be a happy experience for the child.

Awareness — A tour should encourage discovery. A child becomes aware by using all his senses — by looking closely, listening, touching, and smelling.

Concern — Appreciation and concern for preservation of our natural resources is essential for all citizens.

EXPLANATION OF MATERIALS

Ho-nee-um Trail

A portion of the Arboretum within the city limits of Madison was chosen for development of a nature trail suitable for use by school classes. Seasonal and special emphasis slide tours of the area are planned for use by classes preparing for an actual trip. Each tour emphasizes different themes — all chosen to promote the objectives above. An introduction of nineteen slides giving an overview of the area is included with each tour.

Inserted in the script are bracketed paragraphs providing the teacher with additional information. Questions in the script are designed to encourage class discussion during the viewing time.

For an actual walk along the trail at a leisurely pace, at least on hour should be allowed.

WINNEBAGO INDIANS OF THE FOUR LAKES AREA

Written by Virginia Kline,
Arboretum guide and naturalist

Memories of their mound building ancestors had been lost by the Winnebago Indians by the time the first white settlers arrived in the rich four lakes area. For centuries the tribes had lived on the shores of the lakes enjoying the varied hunting and fishing opportunities and the pure water supply. Prairie fires aided their hunting in the open area; fish abounded in the lakes; forests near the lakes gave shelter to woodland animals. Early settlers estimated that several hundred Indians lived in villages along the lakes, their wigwams often within sight of the new log cabins. Children of those first white families had Indian boys and girls as playmates. Among the villages were a large one located where Tenney Park is now and one at the foot of present-day King Street. The hill leading up from there to the Capitol was described as a smooth prairie crossed by Indian trails and dotted with a few oaks. In the Nakoma area were three Indian camps, each located near a good spring: (1) On what is now the front lawn of Dudgeon School and the land across Monroe Street from it; (2) Near the old Spring Grove Tavern; (3) On the present Nakoma Golf Course. These villages were used as summer villages, with the tribe moving northward for winter hunting.

The Winnebagos are related to the Sioux and are among Wisconsin's woodland Indians. Since the number of Indians was small in relation to the land they used, they could live off the natural environment in a way which would be impossible for a city the size of Madison today. Turtles, ducks, muskrats, rabbits, fox, deer, fish were plentiful. Indian boys became expert with bows and arrows by the time they were the age of the present-day sixth graders. Survival depended on skillful hunting and trapping. The women and girls gathered wild rice (plentiful on Lake Wingra in those days), nuts and acorns, mushrooms,

berries, roots of wild plants, and maple syrup. Foods requiring cooking were placed in bark or clay containers and heated by repeatedly adding hot stones. Skins of animals provided clothing and shelter, the sinews a strong sewing and binding material. The skin of the neck of the snapping turtle made the best bowstring. Cattail leaves were woven into mats used in wigwam building and the fluff from the cattail seed heads was used for dressings and cradle board padding. (One of the first disposable diapers?) Fibers from nettle plants were made into fish nets. Basswood trunks made dugout canoes. Wood for bows and arrows was ash or hickory. While he made use of nature's bounty in such ingenious ways, the Indian showed a reverence for things in nature and was a true conservationist. His attitude toward protecting the pure water of the tribal spring illustrates this as does the Indian tradition that land is not owned by the members here today but is held in trust to be used, cared for, and passed on to future generations.

GORHAM SPRING — THE DUCK POND

Written by Charles E. Brown

This fine spring is located by the side of the Nakoma road in Nakoma, opposite the site of the old Spring Grove Tavern, now occupied by James G. Dickson as a residence. This spring was known to the Winnebago who camped here in early days as "Nibin-na-goo" or the trail spring. The name of this camp or village was "Do-gee-ra" or summer village. It occupied the land west of the spring and the ridge or high land above the tavern. From this site the writer and others collected quite a few flint points (1908-1917).

At this Gorham spring the pioneer drivers of ox teams stopped to rest and refresh their oxen. The old road was on the high land west of the tavern building, winding through the present Nakoma park and over the site of the present Nakoma School. Senator Robert M. LaFollette's father and uncles were among these pioneer travelers.

Deer and other wild animals also came to the Gorham spring to drink in early days of settlement. There is an account of a black bear once having been seen there. The Indian hunters, because of some superstition, would not shoot at wild animals that were quenching their thirst at the spring.

Water was hauled from the spring by the farmers of the region who had no well or no good wells. They came from as far as Verona road, generally bringing with them two or three barrels on a wagon. A group of tall walnut trees formerly stood by the roadside over the spring supplying a shade gratefully received.

This spring was recently beautified by the erection of an artistic limestone wall and stairs designed by the famous architect, Frank Lloyd Wright. The land about the spring and stream flowing from it has been converted into a small park area.

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THE MARSTON SPRING

(Arboretum Story)

Written by Charles E. Brown

All of the old settlers of this old Monroe Street neighborhood once resorted to this fine spring, which flows near the edge of the Kenneth Jensen Wheeler council ring in the University Arboretum, for their daily supply of spring water. This little story about this spring was told to the writer by a former resident of the vicinity during a recent gathering at the council ring (June 11, 1938).

When he was a boy his mother once sent him with two wooden buckets to be filled with water at the spring. These he carried by means of a wooden yoke.

At the spring the boy filled his pails. These he left beside the spring while he wandered down along the stream. Near where it entered the lake he caught two medium-sized mud turtles. These he thought a real prize. Of course he wanted to take them home. His hands would be full with the pails so he at first tried to carry them by putting them in the bosom of his flannel shirt. They scratched his skin in crawling around so he took them out. He thought it would be all right to put one in each of the pails of spring water especially if he took them out before going into the house. This done, he shouldered his yoke and carried the pails home. In the yard he met his mother who was horrified to see the turtles in the pails. After she had scolded him and cuffed him well she sent him back to the spring again after two more pails of water. So he was well punished for bringing home turtles in her water pails.

THE ARBORETUM SPRINGS

Source: (See "The Springs of Lake Wingra" by Charles E. Brown in the Wisconsin History Magazine, March 1927, Vol. 10, No. 3, pp. 298-301.)

The Winnebago Indian name for Lake Wingra was Ki-chunk-och-he-er-rah meaning the "place where the turtle comes up."* These Indians have a belief that springs are places through which animals enter into the spirit world — hence a former custom of casting offerings of tobacco, stone and bone implements and other articles into the springs to obtain the "blessings" of these animals. Springs were tribal property and their use was generally well-regulated. To defile a spring by casting camp refuse into it or to misuse it in other ways was certain to bring severe punishment upon the offender's head. Bathing in springs whose waters were in use for household or drinking purposes was strictly forbidden.

The name Wingra, or Weengra as it appears on some early maps, means duck. It is a name also obtained from the Winnebago Indians, who formerly inhabited its shores.

The Springs

Lake Wingra, up to a few years ago, had upon its shores a greater number of fine large springs than any other of the upper Madison lakes. About four or five of these original fifteen springs are now out of existence, due to improvements made on the city shores of the lake. Too, the number and size of these Lake Wingra springs was no doubt largely responsible for the former location of six different villages and a number of camp sites and the large number of prehistoric Indian mounds (150) on its shores. Some of these springs were very near to the Indian trails formerly passing through this region and none very far from them. The Indians appreciated the abundance of clear fresh water.

* Oliver Lemere, Winnebago Indian, 1925

Mighty Midget of

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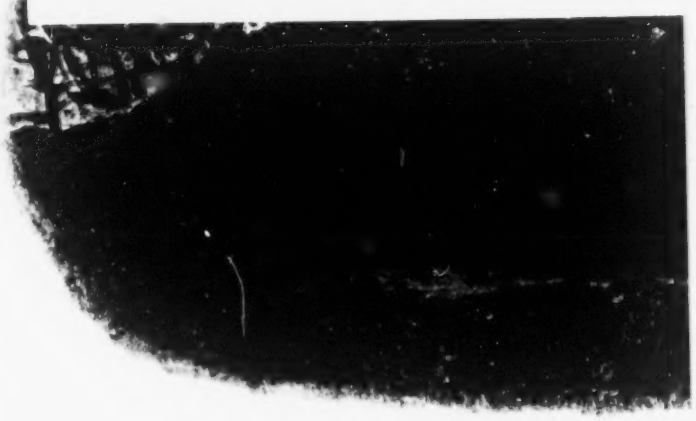
by George Heinold



EARLY ONE SUMMER morning several years ago, my telephone jangled urgently. The caller turned out to be a neighbor, a retired architect now dedicated to maintaining an immaculately groomed lawn and flowerbeds. He guarded them so zealously that they rarely had a chance of striking up acquaintance with a weed, a beetle, or a wilted leaf. Though I'd regarded him as a serene, soft-spoken old gentleman, he was now so emotionally overwrought that he was nearly hysterical.

"Your Bruno's tearing up my lawn!" was the gist of his ranting. "If you don't get right over here and stop him, I'll call the police and have you arrested!"

Bruno was my dog, a huge but affable German shepherd on whose ox-strong back the local tots often rode. The neighbors doted on him, many of them pampering him with doggie candies and other tidbits as he made his morning visits collecting loot. Bruno was the least harmful and the most playful dog I have ever owned, a born clown. So it was impossible for me to imagine what the big buffoon could be doing to arouse such flaming ire in the old man.

I soon learned what it was. Barking as excitedly as if he had treed a panther, Bruno was using his big and powerful forepaws to rip trenches in the velvety lawn. Turf flew in all directions as he frantically pursued a creature which was tunneling so close to the surface of that sacred lawn that I could see the ground rising. Bruno soon captured it – a common ground mole, a mere six inches of luxuriant gray fur. Then I spied at scattered points of what looked like a disaster area the bodies of three more moles which my mighty hunter had already unearthed and slain.

Only casual interest. Prior to that unfortunate episode, my interest in ground moles had been merely casual. I knew that they were mouse-like little animals that lived underground and disfigured lawns and gardens by raising unsightly mounds as they tunneled along. There were times when I had even swatted some I caught elevating the turf in my own lawn with the flat side of a spade, the simplest, most humane and effective way I know for getting rid of them when one hasn't the time to flatten their tunnels with a ground roller until they become discouraged enough to vacate. And I vaguely recalled reading in the Fables of Aesop when I was a boy the scant paragraph about a mole and her dam, or mother, the moral of which was that other people wouldn't notice so many of your faults if you didn't go to so much trouble trying to conceal them. But it wasn't until ground moles became the indirect cause of costing me more than a week's pay to compensate for Bruno's indiscretion and also keep me out of the clutches of the police that I began to take a serious interest in them. I found them to be uniquely interesting little chaps.

Although I doubt if he would have looked at it in this light, my neighbor had also been done another, even more important, disservice by Bruno. The big dog had killed four extremely valuable control agents of destructive insects. Belonging to the order *insectivora*, the common, or Eastern, ground mole appeases an appetite so voracious that he must consume nearly his own weight in food about every twenty-four hours, or quickly perish. Insects are of high importance in his diet. Not only does he devour astonishing quantities of Japanese beetles and the underground larvae from which they develop, but also this burrowing trencherman consumes cut-worms, wire-worms, grubs and other garden enemies in great numbers. He also relishes earthworms, and any field mice that he catches trespassing in his underground tunnel complex are killed and eaten with gusto.

Death on insects. William A. Hornaday, one of our most eminent naturalists at the turn of the century, was among the first to put into widespread print the ground mole's value as an eliminator of harmful insects. Wrote Hornaday, "But for the enemies which keep them in check, there would be a hungry grub for each sprouting

Mining

Illustrated by Michael Ramus

seed." Other naturalists of the era, including Witmer Stone and William Everett Cram, were in firm accord with Hornaday. Most recent naturalists, among them Wayne Barrett and George G. Goodwin, also champion the ground mole's cause.

Generally speaking, our American attitude is different. No country on earth spends more money than we do on such mole-exterminating devices as harpoon, choker or scissor-jaw traps, or such powerful poisons as carbon disulfide, cyanogen, or paradichlorobenzene. The most elaborate and costly mole-killing equipment I know of belongs to a man in one of my neighboring towns. He attaches a hose to the exhaust pipe of his Cadillac convertible, lets the engine run, sticks the other end of the hose in tunnels, and destroys moles by carbon monoxide asphyxiation. The great majority of us become perturbed by the ridges a mole creates as he tunnels just beneath the surface of our lawns, gardens, parks, or golf courses. We particularly dislike the hills which are formed when a mole pushes excess soil through the roof of his tunnels. Although it is the mice which invade his tunnels that destroy vegetables and bulbs which grow beneath the ground, most of us think the mole is the culprit. And so we continue to wage warfare against one of our chief benefactors.

Except for his valuable fur, our unappreciated friend is scarcely a thing of beauty. He is cylindrical in shape, has no visible neck, and his nearly-blind eyes are mere slits. The snout of a mole isn't even as attractive as that of a rat, his inch-long tail is naked, and most of us would rather shake hands with a lobster than grasp one of his rough, oversized forepaws. But the fur of this tiny underground projectile is another matter entirely. "Moleskin", as it is referred to by furriers, has long been regarded by Europeans as one of the world's most elegant looking furs. It is used for evening wear, and has often been the garb of royalty. Moleskin looks well no matter how brushed, for it sets forward as well as backward. Because each skin is so small, about 300 would be required to make a full-length fur coat. The same type of garment can be made from about 50 mink pelts.

The mole has been following his labyrinthine subways for a long, long time. According to scientists, the little guy's ancestors heard the roars of the saber-toothed tiger and felt the tread of the dinosaur some fifty million years ago. Though the mole did not climb many rungs of evolution's ladder, he did manage to survive.

Poor eyesight. He has little need for keen eyesight — which is lucky because his eyes are nearly nonexistent and just about strong enough to distinguish between night and day. Except when evicted from his tunnels by such enemies as man, dogs, foxes or skunks, the only time I have ever known one to leave his element voluntarily is in the spring. His only reason for emerging above ground then is to gather dry leaves and dead grasses for the nest in which the young are born during March or April.

The common mole has one yearly litter of between three and six offspring, all of which are born completely blind, hairless and helpless. These tiny infants, which are about the size of a black-eyed pea, grow rapidly. By the end of two months they are nearly fully grown to six inches or slightly more. Some ten months later, with the coming of another spring, they themselves are ready to breed. The mole's active life is a short one, a maximum of three years, if he is lucky enough to die of old age.

As I have observed on a few occasions while studying them, moles which emerge topside to gather nesting material do so at great risk. Not being able to detect enemies because of their poor eyesight and minor sense of smell, they are completely at the mercy of any enemy capable of capturing and killing them.

One day, while seated with my back propped against the trunk of a large maple tree watching a mole search for nest grass, I caught sight of a shadow racing over the ground. Before I could look up, a diving hawk pounced on that hapless mole and air-lifted him swiftly away. At another time under similar circumstances it was a large black snake that caught the mole I was studying. And during still another the executioner, to my amazement, was a crow.

Tunnel fighter. I have good reason to suspect, however, that the battles a mole wages against his larger enemies within the confines of his underground domain often end up differently. Though they are very small, his

Mighty Midget of Mining

sharp, sickle-shaped teeth are potent weapons. With them he can sever small roots that interfere with passage through his tunnels. As I have previously pointed out, a mole can without much difficulty slay and devour field mice, trespassers not much smaller than he is.

It was during a warm spring afternoon that I learned that a mole is capable of overcoming more impressive foes than field mice. At the time I was walking quietly around a new series of tunnels and molehills I'd discovered in a low-lying pasture bordering a piece of marshland when I suddenly heard hisses, faint angry squeals and scuffling sounds. Looking around me, I saw that the top of a runway was heaving because of a struggle within. I stood by and watched.

A few minutes later the forward end of a young black snake, the ground-dwelling kind often known as a black chicken snake, more than two feet long emerged from the molehill. That distressed serpent was writhing and lashing with all its might in its attempt to escape from the tunnel. Finally it succeeded. Then I saw the cause of its anguish: a mole was clinging to its stomach and slashing at it so viciously that more than half had already been torn away.

Although the powerful black snake often kills by constriction, this one obviously had been unable to coil itself around the mole in the limited space of the tunnel. It now sought to do so, but it was too late. The badly wounded reptile had spent the last of its vitality making it to the surface and soon expired. The mole feasted until he was scarcely able to waddle back into his tunnel. When I returned to the scene the next day only fragments of the snake remained.

When I was a lad in rural Connecticut, there was an old fur trapper in our neighborhood who used to regale us youngsters with tales that were decidedly tall. Once he spun one to me about a violent battle between two raccoons in a hollow log. When the sounds finally died down, he told me, he looked into the log to see what happened. Then he lapsed into silence and appeared to brood.

"What did you see?" I asked breathlessly, unable to tolerate the suspense any longer.

"Nothin'," he solemnly replied. "They et each other up."

Kill each other. If that bit of exaggeration applies to any of our smaller mammals, the ground moles would be among them. They wage warfare against one another as vengefully as they do against other creatures. This is particularly true of the males during the courtship season in early spring. Many times while visiting mole homesites at this time of year I have heard them fighting in their tunnels. Only once have I seen a vanquished mole retreat from a fight. Torn and bleeding about the shoulders, this one bolted out of a molehill and scurried into a clump of grass and out of sight. The victor emerged partially from the same hill but made no attempt at pursuit. It is my opinion that most of the fights between moles are climaxed by the death of one of them. And I also think that the winner practices cannibalism.

What I have just said I base not only on the strong circumstantial evidence that one rarely sees a fighting mole flee but also on eye-witness evidence. Several years ago when, after having sealed off occupied sections of some mole tunnels with stakes and wearing heavy leather gloves, I captured a pair of ground moles and placed them in separate wire cages in order to observe them closely and learn more about their dietary habits. My experiment proceeded well until, a week later, one of my young sons took a hand in the matter.

"Dad, I've pulled an awful goof!" the youngster cried, rushing into my study. "I felt sorry for those moles, I thought they were lonesome all by themselves. So I dumped one into the cage of the other. Now they're fighting so hard I think one of them is going to get killed."

Laying aside the papers on which I was working, I followed the boy into the garage where I was keeping the moles, which were of the same size. But I was too late to prevent disaster. One of the moles, his throat torn open, was already kicking his last. Ignoring the supply of insects and earthworms I'd placed in his cage less than an hour before, the winner of the conflict was already dining on mole cutlet. Although naturalists agree almost unanimously that moles eat nearly their own weight every twenty-four hours, the survivor accomplished this feat in only eleven.

Leading mine engineer. Although the common ground mole does not in any sense practice the doctrine of brotherly love, and is a delinquent father who deserts home and family after the young are born, no one can deny that he is one of the leading mining engineers of the animal kingdom. For carrying out his purpose in life he has been endowed with superb equipment. His powerful, five-toed forepaws, much larger than his hind ones, are an efficient pair of shovels and ideal for excavating tunnels in the earth.

In loose, sandy soil the tunnels of moles have been measured at over a mile in length. I have measured several in ordinary pastureland at over half a mile. Observers of these underground bulldozers and their ways have re-

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ported that they have known moles to tunnel a hundred and more yards during a period of twenty-four hours. One mole that I captured and released in different territory completed a zigzag tunnel of thirty-seven yards during that space of time. I timed this one with the sweep-second hand of my wrist watch when I gave him his freedom. It took only eleven seconds to dig himself out of sight. In three minutes he had dug a tunnel fourteen inches long.

A friend of mine who is an enthusiastic golfer and an accomplished player has good reason to believe that a ground mole is a mighty digger. He was competing in an amateur tournament when, on the green of the third hole, he was required to make a long putt. He was in good form that day. The ball was rolling along smoothly and precisely on course for the cup when, about a foot short of its goal, the ground bulged enough so that it missed. That mole's life ended under the clouts of number five all-purpose golf clubs.

"Oh, they were good enough to allow me the putt," he later told me. "But that nasty little pest unnerved me enough so that I wasn't any good for the rest of the game. You say that moles are beneficial to men? I say phooey!"

I know of a social-minded young matron who gave an evening lawn party in honor of her husband's boss who, while circulating among her guests, felt her high French heel sink into a newly-created mole tunnel. Startled, she tried to extricate herself by swinging quickly about. That mortified lady fell flat on her face almost at the feet of her husband's boss. Like my golfing friend, she will never believe a kind word said in the defense of the ground mole.

Enrich the soil. Regardless of their faults, ground moles have for millions of years performed tasks which have benefited more than they have harmed us. As these miniature bulldozers in fur use their powerful forepaws to follow their awl-like snouts in their constant pursuit of food, they are enriching our soil and making it fertile. Our priceless bottomlands would not be as productive as they are if countless generations of moles had not dug their tunnels there. These runways help keep the soil from turning rancid by draining off excess rainfall, and they serve as miniature irrigation systems in dry pasturelands, making it possible for the water to be evenly distributed. Moles are also among our most valuable tillers of the soil. Their efforts bring subsurface soil to the top, where it mixes with decaying vegetation and other organic material to create good loamy topsoil which produces our bountiful crops of grain, vegetables, fruit and timber. And, without the diligent service of the moles in the control of insects, we might be using sprays powerful enough to destroy the human race.

The industrious mole maintains two kinds of tunnels. The better known of these is, of course, the shallow type which all can see and from which he probably obtains most of his food during the warm months. His other tunnels are deeper, some of them more than two feet below. These he uses in cold weather, as well as during periods of droughts.

Although there are seven known species of moles distributed across our country, of which the eight-inch Western or Oregon Townsend mole is the largest, there are no true moles in the far north. In the far north the ground freezes to too great a depth for moles to carry on their tunneling. Here they are replaced by shrews, our smallest mammals and relatives to the true moles. There is also an aquatic mole, the star-nosed mole of our northerly and middle states. This one lives in marshlands and around brooks and ponds, is capable of swimming and diving, and is reputed to be nearly as well-fitted for a life that is spent partly in the water as the mink and the otter. Ranging from southern Canada southward to the lowlands of Florida, the common ground mole has shown no signs of having learned to swim in all the water which exists around him.

Well-planned home. Although their eyesight is practically nil, common ground moles frequently safeguard their dens and nurseries by building them underneath boulders and stumps. On three occasions I have uncovered mole burrows for examination. They are remarkably well-planned, almost as well as those of woodchucks. All three were situated about two feet below the surface. Dome-shaped, from a foot to fourteen inches across at bottom, and reached by a slanting tunnel, two of the burrows I inspected had three small six-inch galleries running off them. The third burrow, a deluxe model, boasted four galleries. Considerably elevated with mounded earth and located in a far corner, the nests of all three burrows were lined with soft leaves and grasses.

Regardless of one's personal opinion, the ground mole, for a little creature less than seven inches long in adult-

hood, is truly remarkable little toiler as he virtually "swims" through the earth with his powerful breast stroke. In my opinion, the best description of his tunneling prowess was given by the naturalist Dr. Robert W. Hegner. Reporting on two moles, one of which dug 68 feet of tunnel in 25 hours and the other 100 yards in a single night, Dr. Hegner said, "To do a proportionate amount of digging a man would have to make a tunnel 50 miles long and large enough for him to crawl through."

The ground mole is indeed the mighty midget of the world of mining and tunneling. □

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Suggested Bibliography for Teachers

General:

Leopold, Aldo, Sand County Almanac
A delightful collection of essays ranging from sensitive descriptions of the inhabitants of the natural world to the author's thoughts about the land — a philosophy which has had far-reaching effects in the conservation field.

Milne, Lorus and Margery, Balance of Nature
Some examples of disastrous, though often well-meant, interference by man in natural systems.

Sachse, Nancy, A Thousand Ages
A history of the University of Wisconsin Arboretum.

Watts, May T., Reading the Landscape
Story-like explanations and charming sketches which give the reader a new historical and ecological understanding of the natural landscape.

Specific:

Archbald, David, Quick-Key Guide to Trees
Emlen, John and Archbald, David, Quick-Key Guide to Birds
Easy method of identification and fun for children.

Barker, Will, Familiar Insects of America
Life histories of common insects.

Golden Nature Guide Series
Insects — Non-flowering Plants
Mammals — Pond Life
Simple identification to common species.

Jackson, H.H.T., Mammals of Wisconsin
Information and pictures

Peterson, R.T., Field Guide to the Birds
A complete guide to bird identification.

Badger History resource unit "Wisconsin Indians" has a good chapter on "The Woodland Indians" written for classroom use. It is available from the State Historical Society, $1. single copy. Ten or more $.50 each.

Suggested Books for Children:

Boulton, Rudyerd, Traveling with the Birds

Buck, Margaret, In Ponds and Streams

Darling, Louis, The Gull's Way

Headstrom, Richard, Adventures with a Hand Lens

Hess, Lilo, Foxes in the Woodshed

Hutchins, Ross, The Travels of Monarch X
The Amazing Seeds

Podendorf, Illa, True Book of Insects

Rounds, Glen, Rain in the Woods and Other Small Matters

Sterling, Dorothy, Story of Mosses, Ferns, and Mushrooms

Outline of Themes for Fall Tour

Major themes:

1. Plant and animal relationships

mammals	squirrel — acorns
	mole — earthworms and grubs
	rabbit — plants
	fox — rabbit
	chipmunk — seeds, nuts, berries
birds	chickadee — insects, seeds
	great blue heron — fish
	redwing blackbird — seeds, insects
insects and spiders	ants — wood
	katydid — plants
	spider — insects

2. Seed dispersal

wind
animals
    berries
    sticktights
catapult

3. Getting ready for winter

migrating south
storing food
growing warmer fur
finding sheltered locations
having a winter resistant form (i.e., eggs, pupa, seeds, leafless trees)

SPECIAL NOTE:

Please do not judge the quality of the beautiful full-color pictures in the Filmstrip by the appearance of the black-and-white photos in this Guide! Obviously, there is no comparison between full-color and black and white pictures.

1

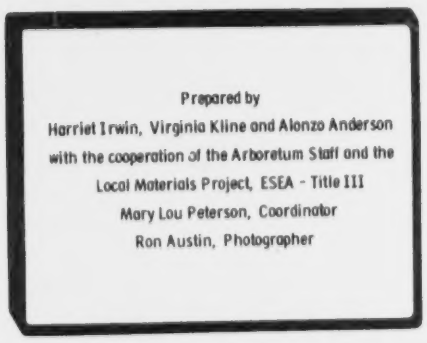
Colophon

Bird Calls

2

Title Frame — "Ho-nee-um, A Refuge"

Bird Calls
Note: Teacher's supplementary materials are included in brackets following narrative script.


Prepared by
Harriet Irwin, Virginia Kline and Alonzo Anderson
with the cooperation of the Arboretum Staff and the
Local Materials Project, ESEA - Title III
Mary Lou Peterson, Coordinator
Ron Austin, Photographer

3

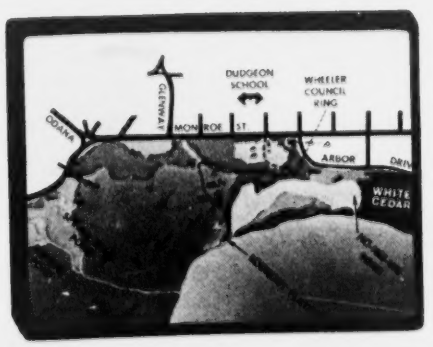
Credit Frame

Bird Calls

4

Within the limits of the city of Madison, but wonderously removed from the city bustle, a narrow island shelters a small pond. This aerial view of Ho-nee-um area gives a different perspective.

A comparison with the map in the following frame will identify some of the distinctive landmarks: Dudgeon School, Monroe Street, the large island, Lake Wingra and Ho-nee-um Pond.



5

Situated across Monroe Street from Dudgeon School, the island, the pond and the mainland near the pond are part of the University of Wisconsin Arboretum.

A printed map of the Arboretum posted in the Ho-nee-um parking area is available at a small cost from the Arboretum office. At the back of this manual is a master for making individual maps or a transparency.

6

A short bus ride can take a class of school children from any part of the surrounding area to this parking lot and the beginning of an easy-to-follow nature trail.

At school beforehand and in the parking lot before the tour begins, a review of tour manners might be helpful. Some possible rules might be:

1. Stay behind guide or teacher.
2. Walk quietly.
3. Use eyes and ears.
4. Do not pick plants or disturb the animals.
5. Do not drop litter.

7

In the clearing, next to the parking lot, stands a large rock delivered to this spot by a glacier — a grinding, bulldozing river of ice which moved over this part of Wisconsin from the north thousands of years ago. Since that time Indian tribes have come and gone from this place; pioneer farmers have used the land; a city has grown to within a hundred feet.

The large rock is visible to a class passing through the trees and into the park area. The trail begins here. This rock gives an indication that the Madison area was glaciated. The most recent glacial advance in this area ended about 20,000 years ago. This glacier greatly affected our present landscape for it created our famous lakes, including Lake Wingra, leveled off some of the hills and deposited soil and rocks. The last glacier moved from the northeast as far as the Madison area. Southwest of Madison (Dodgeville, etc.) the land forms are those of an unglaciated area.

8

Carved letters on the rock spell HO-NEE-UM, the Winnebago Indian word for a refuge or sanctuary. This is the name of the pond and the land near it which have now truly become a refuge or safe place for the plants and animals which live there.

See "Winnebago Indians of the Four Lakes Area." (Section I B of this guide)

9

Near the entrance to the clearing, three large trees stand in a row. These "Three Sentinels" as they are called are shown here as they appear in winter.

10

In summer the Sentinels look very different. Each season makes exciting changes in the Ho-nee-um area.

The "landmark" called the Three Sentinels illustrated the variety of trees which grow in the area. The two pictures were taken from the same spot — in different seasons. Perhaps the slides could be flipped back and forth so the children could notice similarities and differences. The point here is that the area is in constant change, so no two days are exactly alike and not everything can be seen in one trip. (For those especially interested in identification, left to right the Three Sentinels are: box elder, bur oak, and hackberry.)

11

From the clearing a graveled trail makes a loop through the woods, . . .

12

. . . across part of the marsh, . . .

13

. . . and along the edge of Ho-nee-um Pond. Woods, marsh, and open water — different living conditions to suit many kinds of plants and animals.

The Ho-nee-um area lends itself well for exploration, but for the first time at least, it is best to follow the route shown on the enclosed trail guide found in Section II C.

14

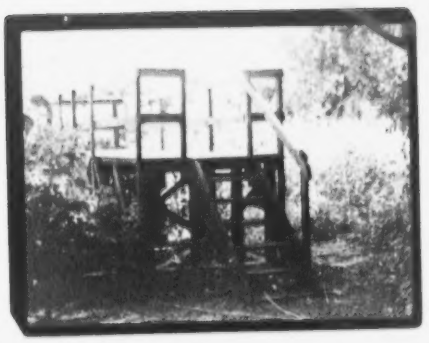
Landmarks along the trail include this hollow tree — a place for an animal to rest or hide, . . .

This natural landmark is easily spotted from the trail (by Post #7). The tree was perhaps damaged by fire. The children might like to discuss the uses of such a tree, and what is happening to it. They should also be encouraged to actually feel the tree, inside and outside the scar.

15

. . . and a man-made place for a class to sit quietly and listen to the sounds of nature. This Council Ring was beautifully designed by Jens Jensen, a well-known landscape architect, as a memorial to his grandson. A spring bubbles nearby during the early part of the year.

The following information is from A Thousand Ages by Nancy Sachse, page 48. "Four years later an even larger pond, Ho-nee-um, was dredged on the north shore. Besides this undertaking in 1938, Arboretum land holdings here were further enhanced by the Kenneth Jensen Wheeler Council Ring, a memorial to a young landscape architecture student who died on the eve of his graduation. The limestone ring was designed by Kenneth's grandfather, Jens Jensen, creator of the Clearing in Ellison Bay, Door County, and one of the early conservationists who assisted in the formation of National Park policy under Theodore Roosevelt. Supervision of the labor and much of the stonework on the memorial was carried on by the boy's father, Edison Wheeler, and the Ring dedicated in a simple, moving ceremony the Sunday of Graduation Week."



16
Another landmark is the observation platform, from which Lake Wingra can be seen.

17
"Wingra" comes from the Indian word meaning duck water. Ducks were very plentiful on the lake in Indian times and some may still be seen.

18
From this lookout point, a class can gather and observe wildlife both in the pond and on the large island.

The University of Wisconsin Arboretum is developing the Ho-nee-um area especially for school classes. These two man-made landmarks can be used by an entire class to observe the marsh and pond in action. A marsh is a very unique habitat and one which is fast disappearing due to draining and filling. An appreciation of the plants and animals and how they interact is needed if we are to save areas such as this.

19
Each visit leads to new discoveries at Ho-nee-um, a special place for plants and animals, a quiet place for the people of the city.

Late in the spring the cottonwood tree drops its seeds, some of which are floating on the water in this slide. Ho-nee-um Pond is an exciting place at any time of the year. There is something new to see each time you visit. Appreciation grows with renewed acquaintance so we encourage you to come often.

20
"Ho-nee-um Trail in the Fall"

21
Fall is coming. The days are getting shorter and cooler. The plants and animals at Ho-nee-um are getting ready for winter.

> The slide may stimulate a discussion of how many animals (including people) prepare for winter. All animals need food and protection from the cold.

22
Nature shows her brightest colors in the fall. This climbing vine, woodbine, is one of the first plants to change color at Ho-nee-um. What plant shows the first fall colors in your neighborhood?

> The children should notice the five-part leaf of woodbine. A classroom activity might be to bring in colored leaves and place them on a "calendar" marking the progress of fall.

23
What will you discover when you step from the parking lot and walk along the trail?

> The pictures are meant to encourage but not limit the children's discoveries. This slide shows the entrance to the mowed area and the beginning of a tour.

24
Many trees get ready for winter by losing their leaves. When you stand near Ho-nee-um Rock you can see the large bur oak in the center of this picture. It will soon drop all its leaves.

25

You can see the shape of the bur oak leaf on the ground. Can you find the acorns? Acorns are the seeds of the oak trees. They provide food for animals. The Indians also used them for food.

The bur oak is a fire-resistant, sun-loving tree with thick corky bark. The leaf shape is unusual — sometimes described as having a "wasp waist" and rounded lobes. The acorn is very characteristic with a rough almost shingled cap. The fallen leaves provide food for many organisms in the soil and in the process are decomposed, returning nutrients to the soil.

26

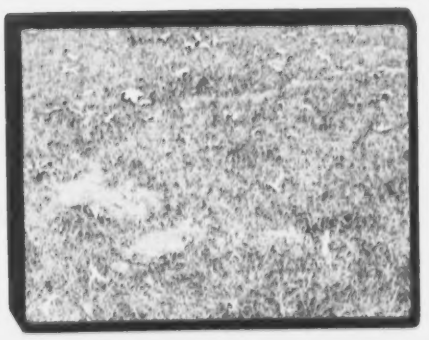
Here is a common animal found wherever oaks grow. To get ready for winter the squirrel grows a thicker coat and stores food. Have you seen a squirrel storing acorns? How does this help the oak tree?

The big idea emphasized here and in other slides is that plants help animals and animals help plants. In this case the squirrel will bury acorns at some distance from the parent tree, thereby helping to disperse the seeds. The squirrel will not find every acorn this winter so perhaps a new oak will grow.

27

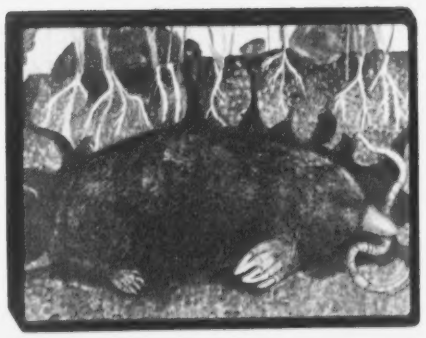
Across the lawn from the oaks are the Three Sentinels. Can you tell from this picture what time of year it is? Did all three trees lose their leaves at the same time?

We encourage coming often to Ho-nee-um to compare changes due to the seasons. The Three Sentinels are examples of this change.



28

The mowed grass in the clearing seems to have bumpy places and small mounds of dirt. A small animal has been making underground tunnels in order to find worms and grubs to eat. The tunnel-maker is a mole.



29

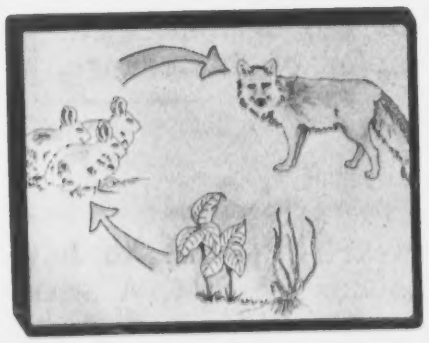
A mole has dark gray velvety fur. Its body, with strong shoulder muscles and extra large shovel-like front feet, is designed for digging. A mole spends its entire life in underground tunnels. It is blind. Can you think of other senses that might be more important to a mole than sight? Why? What do you think a mole does in winter?

Notice the curving C-shape of the tunnel. A mole is seldom seen although the tunnels are evident. Shrews and mice are often confused with this animal. In winter the mole does not hibernate; it moves to depths where the soil is not frozen. The sense of touch and the ability to detect vibrations are especially important to this animal. Children find it fun to actually feel the hole made by the animal. This also helps them realize how small the mole is.

30

Here is a plant you should know at any time of the year. You can see it near Post #4. How has it changed for fall? Poison ivy can cause a rash if you touch it. Do you notice, however, that something is eating the leaves? Birds eat the berries of poison ivy and rabbits eat the bark, especially in winter when food is scarce. Are all creatures affected by poison ivy?

Poison ivy affects humans adversely, but apparently not other animals. We should become familiar with it in all stages and keep our distance. The plant with white flowers at the left of the picture is not poison ivy, but white snakeroot, a common fall flower.



31

What else do rabbits eat? What might eat a rabbit?

Cottontail rabbits eat a great variety of green plants. Because they reproduce so prolifically (a female commonly produces 2 to 4 litters of 3 to 6 young each and every year!), predators are necessary to keep the population at a reasonable level. Without foxes, hawks (and man), the rabbits, as well as other plant eaters, would become so numerous that their food supply would be exhausted, and they would starve to death.

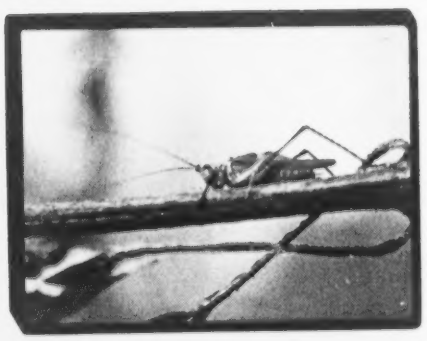
32

The Council Ring is a good place to look closely at things around you. You might find . . .

33

. . . a spider's web which looks like an artist's design. The spider spins this web of finest silk not for beauty but as a trap to capture small insects for food. The insects are held by sticky threads. Do you know how the spider keeps from getting stuck?

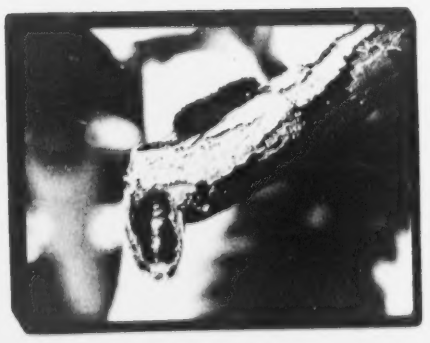
The spider is another predator, for its food consists mainly of insects caught in the web. Not all the threads of the web are sticky and the spider can distinguish between the two.



34

Perhaps when you look closely you will find a long-legged green insect. The katydid will not live through the winter, but will lay eggs in the fall which will hatch in the spring. Katydids eat green leaves. Can you think of something which might catch and eat a katydid?

The katydid is related to the grasshopper. Members of this family hatch from eggs into a form similar to the adult but smaller and without wings. Several molts are needed to reach adult size. Some katydids are green; all have very long antennae and are found in trees and bushes. Each species of male katydid has a characteristic "song."

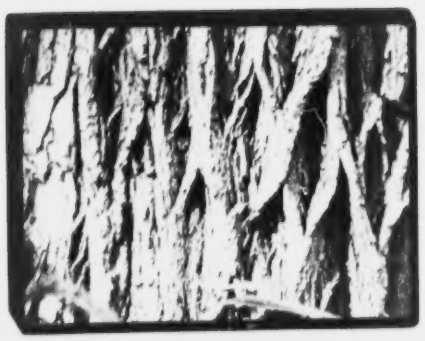


35

Some insects do live through the winter. The wooly bear caterpillar will hide beneath a log or piece of bark. Can you look closely and see something else that is alive in this picture? Hidden in a hole in the wood is an insect which will spend the winter as a "pupa."

A pupa is an intermediate stage in the development of many kinds of insects (egg--larva--pupa--adult). Often a hard pupal case surrounds the insect affording protection. A cocoon and chrysalis are examples of this case, with the pupa inside.

24



36

Can you see some places where an insect might find a winter hiding place in the bark of this tree?

Bark of willow tree

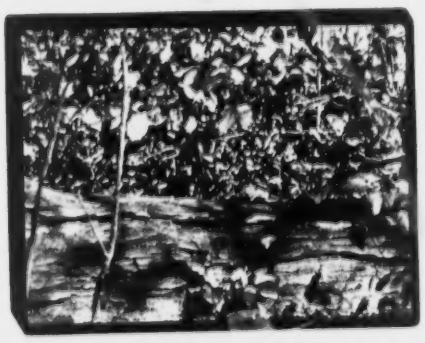
37

Sometimes a bird will find the insects hiding in the bark. Chickadees stay at Ho-nee-um all winter and depend on finding seeds and hidden insects for their food. (Hold during the chickadee call)

For many birds, the availability of food determines their location during the winter. Many insect eaters will migrate south, whereas seed eaters may remain permanent residents in an area.

38

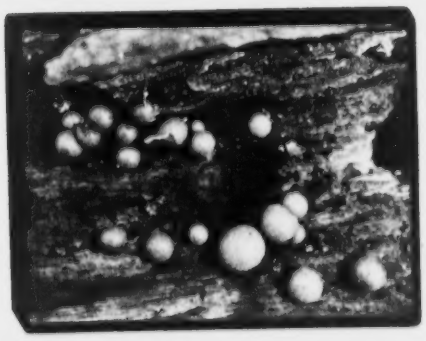
We leave the Council Ring and walk along the trail past the hollow tree.



39

Along the way here and there old logs lie on the ground. Once these were upright trees which fed many kinds of insects with their green leaves. Other kinds of living things are using the trees for food now.

Some children may spot the chipmunk on the log — well camouflaged.



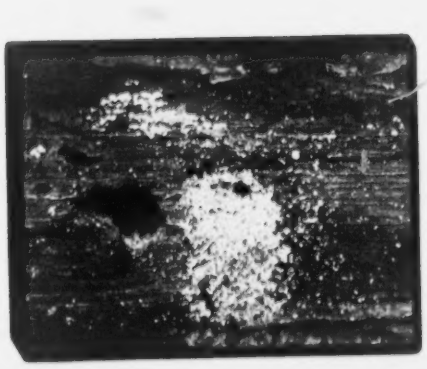
40

Perhaps we can find a tiny, round plant . . .

41

. . . or a larger one using the log for food.

Because of the edible food association we prefer the children learn the term fungi — rather than mushroom. Fungi are non-flowering, non-green plants and include mushrooms. Any distinction between "mushroom" and "toadstool" is hazy and artificial. Some label toadstools as poisonous; mushrooms edible. Unless one is a real expert, fungi should not be picked for eating! The fungi using the log for food are aiding in the process of decay. Through decay nutrients in the log will be returned to the soil where they will perhaps be used by a new tree.



42

Insects live in the old logs, but you may have to look closely to see them.

Carpenter ants have been at work on this portion of the log. The amount of sawdust is evidence of their industriousness.

43

In the fall, as we leave the woods and enter the marsh, we find ragweed growing taller than our heads.

44

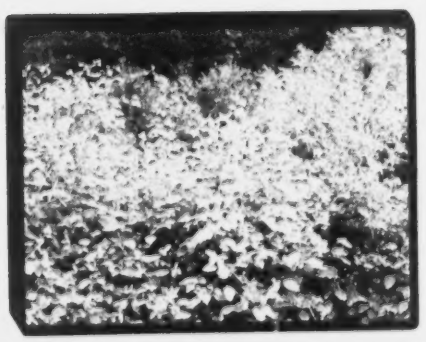
The pencil points to the seeds of this fast growing marsh plant — the giant ragweed.

45
The seeds are eaten by many marsh birds such as . . .

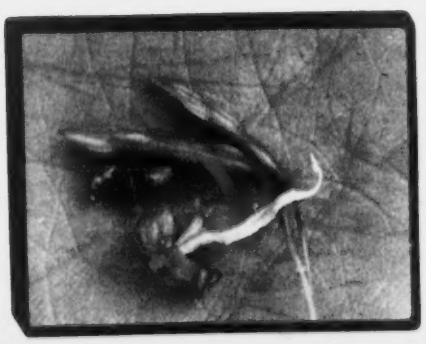
> Giant ragweed is an aggressive, fast-growing plant — known as a weed. Like many weeds, it is a source of nourishing seeds, protective cover, nesting sites; weeds have an important role in controlling soil erosion as well.

46
. . . the redwing blackbird. In the fall these birds gather together for a long trip south. Large flocks can be seen in cornfields and marshes. What are they doing there? (Hold during the blackbird call)

47
What do you see in this picture? Do the glistening drops of water look like jewels to you?



48
Someone thought so, and named this plant "jewelweed." Jewelweed has a special way of spreading its seeds.



49
The narrow green pods explode when touched so that the dark seeds inside shoot several inches into the air!

> It is said that the juice found in the stems of jewelweed can be rubbed on the skin to alleviate the itch of poison ivy.

50

Other marsh plants let the wind carry their seeds. Each seed has its own parachute. Perhaps a few will grow in a new place next year.

Swamp milkweed

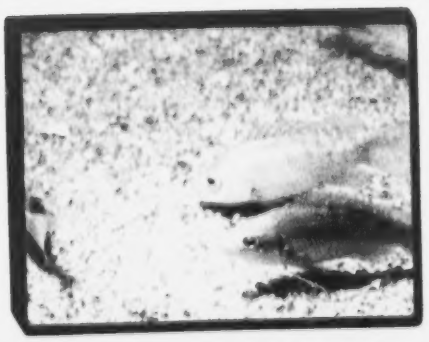
51

The platform is a good place to see birds in the water. You know that ducks like to swim in water but do you know that some birds . . .

52

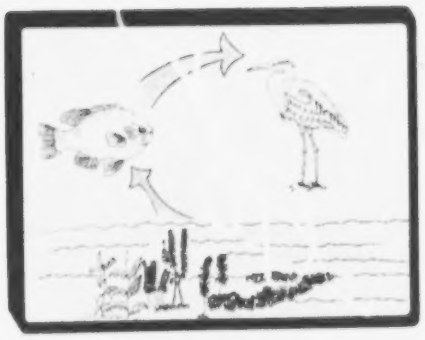
. . . wade in shallow water? The great blue heron has stopped at Ho-nee-um before going south. Those long legs and that sharp bill are good for catching food such as . . .

The great blue heron is often seen in the Arboretum in the spring (April) and fall (Sept.). They are large wading birds standing four feet tall and with a wing spread of six to seven feet. Herons are conspicuous in flight with their S-curved neck and trailing legs. Their communal nesting sites, called rookeries, can be seen along the Wisconsin River.



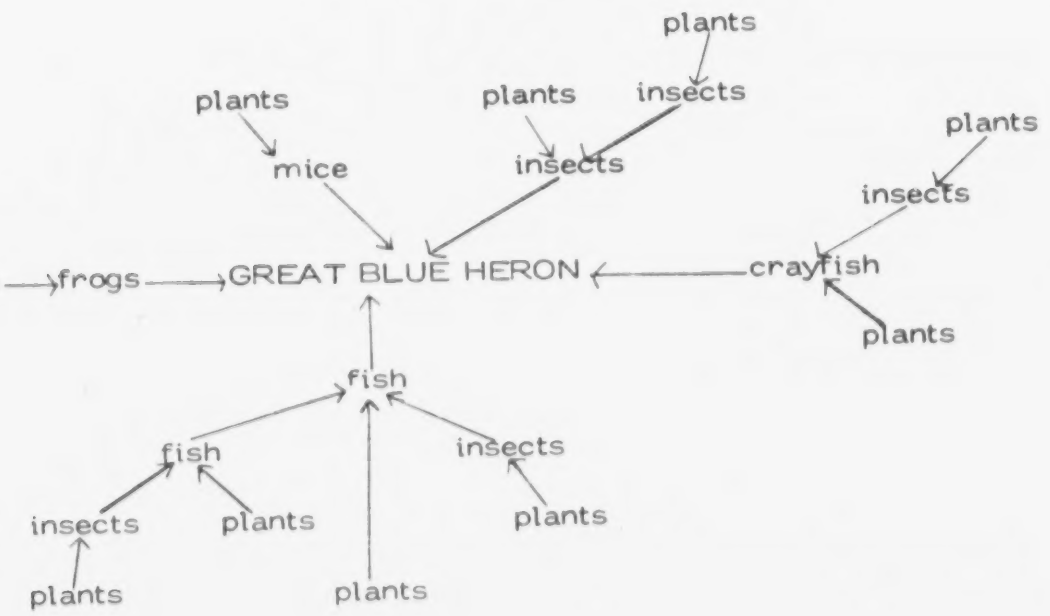
53

. . . a fish.



54

What is food for the fish in this diagram? What is food for the great blue heron? What else might be food for these animals?



55

The trail leads from the lookout point, back through the woods. Perhaps you will see something that other birds like to eat.

Highbush Cranberry

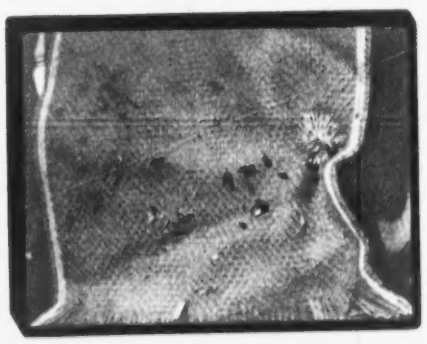
56

Inside each berry is a seed — or perhaps several seeds.

Elderberry

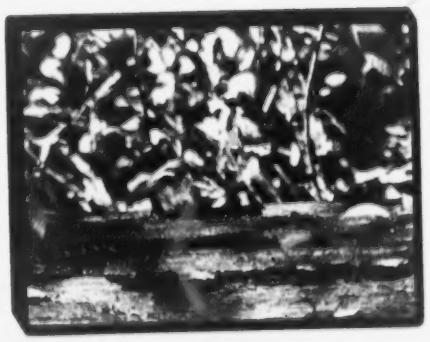
57
When birds and animals eat the berries the seeds may be dropped in new places. Can you remember other ways that seeds travel?

Gray Dogwood



58
Look closely at these hitchhiking seeds. Can you see how they might travel from place to place?

A review of seed dispersal methods would be helpful here — wind, catapult, birds and other animals. The great variety of plants at Ho-nee-um help to support the abundant wildlife.



59
Like the squirrel, the chipmunk in fall is busy getting ready for winter by storing seeds. Its furry coat also grows thicker. Do you think that fur might carry some hitchhikers? How does the chipmunk help the plants?

Unlike the squirrel who is active and visible during the winter, the chipmunk remains in the underground burrow. He is not a true hibernator, however, but stirs occasionally and eats some of the stored food.

60
You have seen examples of how plants and animals help each other. Here is an example of something that helps no one. When the Indians lived near Ho-nee-um they felt the spring belonged to the whole tribe. There were rules to protect the spring water. Anyone who threw trash or bathed in the spring was severely punished.

See Charles E. Brown "The Arboretum Spring" in the kit — Section I B of this guide.

28

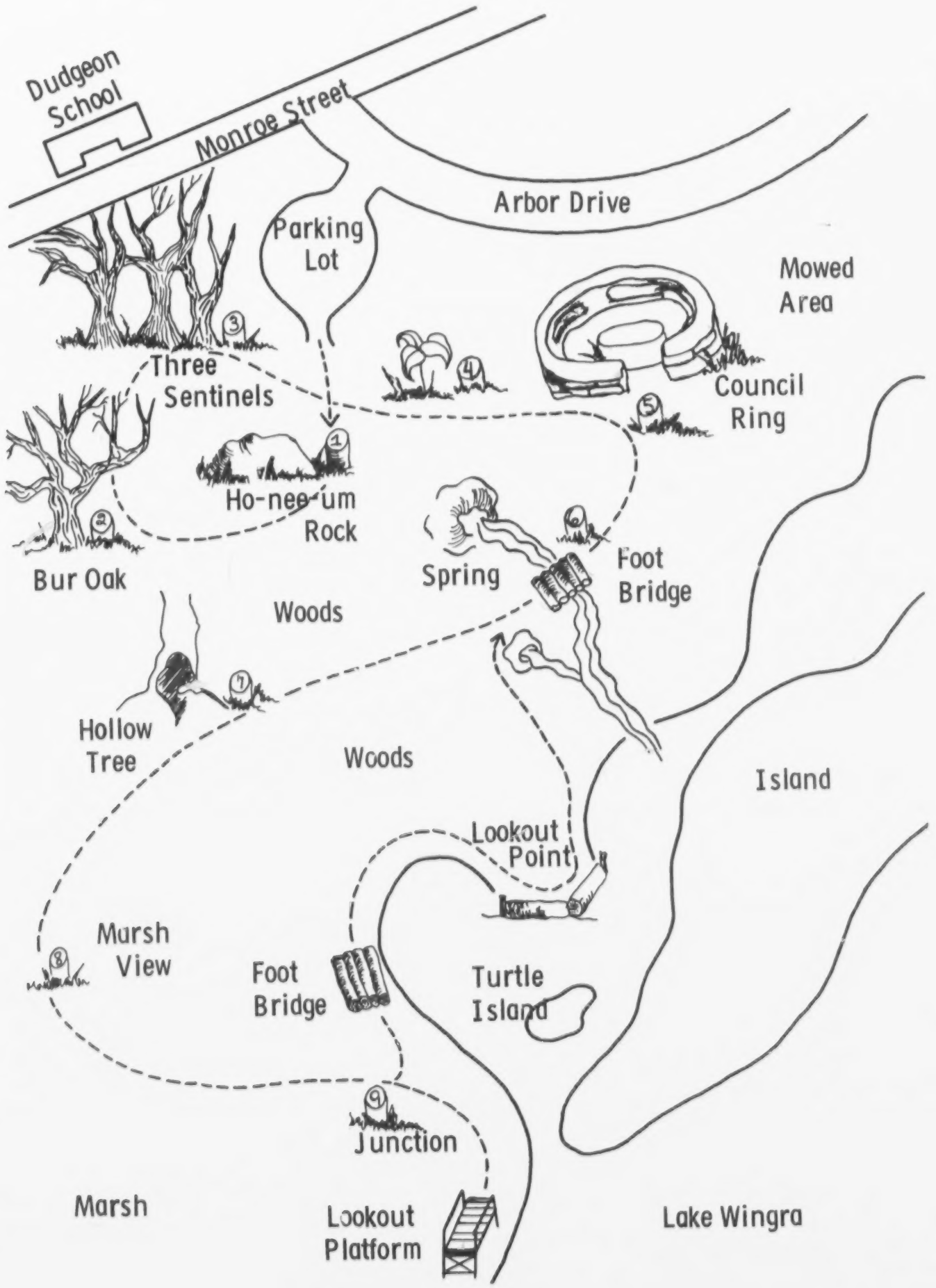
61
There are many things to discover at Ho-nee-um at any time of day, in any kind of weather, in any season. Come often!

62
The End.

Bird call

29

TRAIL GUIDE - MASTER COPY



30

Local Materials
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2947